*Phytologia* (May 1994) 76(5):345-382.

# A TAXONOMIC OVERVIEW OF *SCUTELLARIA*, SECTION *RESINOSA* (LAMIACEAE)

Billie L. Turner

Department of Botany, University of Texas, Austin, Texas 78713 U.S.A.

## ABSTRACT

A taxonomic study of the *Scutellaria* section *Resinosa* sensu Epling (1942) is rendered. Twenty-six morphogeographical taxa are recognized including nineteen species and nine varieties as follows: *S. anomala*; **S. aramberrana** B.L. Turner, *sp. nov.*; **S. bartlettii** B.L. Turner, *sp. nov.*; *S. carmenensis*; **S. chiangii** B.L. Turner, *sp. nov.*; *S. drummondii* (with three infraspecific categories: var. *drummondii*; var. **edwardsiana** B.L. Turner, *var. nov.*; and var. **runyonii** B.L. Turner, *var. nov.*); **S. durangensis** B.L. Turner, *sp. nov.*; *S. fruticetorum* (previously placed in sect. *Galericularia*); *S. hispidula* (including *S. horridula*); *S. laevis*; **S. monterreyana** B.L. Turner, *sp. nov.*; **S. mulleri** B.L. Turner, *sp. nov.*; *S. muriculata*; **S. muzquiziana** B.L. Turner, *sp. nov.*; *S. potosina* [with six infraspecific categories: var. **davisiana** B.L. Turner, *var. nov.*; var. **grahamiana** B.L. Turner, *var. nov.*; var. **novoleonensis** B.L. Turner, *var. nov.*; var. **platyphylla** (Epling) B.L. Turner, *comb. et stat. nov.*; var. *potosina*; var. **tessellata** (Epling) B.L. Turner, *comb. et stat. nov.*; var. **zacatecensis** B.L. Turner, *var. nov.*]; *S. resinosa*, **S. stewartii** B.L. Turner, *sp. nov.*; **S. texana** B.L. Turner, *sp. nov.*; and *S. wrightii*. Keys for identification purposes are provided for all of these, along with maps showing their distribution. A brief introduction to the characters utilized in the delineation of sect. *Resinosa* is given and, when deemed necessary, appropriate comments upon their interspecific relationships are provided.

KEY WORDS: Lamiaceae, *Scutellaria*, sect. *Resinosa*, México, Texas, U.S.A.

*Scutellaria* is a large difficult genus of 200 or more species occurring worldwide. It is a very natural group and readily recognized by its 2-lobed calyx

having a distinctive transverse crest (the scutellum, hence its name). The only closely related genus is the monotypic North American *Zalazaria*, and even that very distinctive element of the desert southwest (northern México and U.S.A.) has recently been subsumed into *Scutellaria* (Patton 1990. Notes Roy. Bot. Gard. Edinburgh 46:147). Barkley (1975; *cf.* Sanders & Cantino 1984), however, recognized *Zalazaria* as the only member of the family Zalazariaceae. Regardless, both *Zalazaria* and *Scutellaria*, as noted by Olmstead (1990), have been treated as the only members of the subfamily Scutellarioideae by Briquet (1895) and there is little question as to their close relationship.

Bentham (1830) was the first worker to provide a comprehensive worldwide treatment of the genus and this was built upon by Briquet (1895). Since the latter publication, most treatments of *Scutellaria* have been regional in nature. Epling (1942) provided an inclusive treatment of *Scutellaria* for North and South America, but before him, Penland (1924) and Leonard (1927) provided partial coverage of the North American species. Epling's (1942) opus, however, was by far the most ambitious study. In this he distributed 113 species of *Scutellaria* among eighteen sections. He recognized that the sections were to some considerable extent arbitrary, or at least not clear cut, for he states (p. 3) that his treatment should "be recognized as exploratory and suggestive, and by no means definitive. I shall be amply rewarded if it serves as a basis for a more comprehensive and intensive attack." And that it has, especially as to the recognition of sectional groupings.

The section *Resinosa* was largely defined by Epling as a group of xeric or subxeric mostly tap-rooted species of México and closely adjacent U.S.A. having mostly small, shortly petiolate, entire to subentire leaves, the flowers axillary and arranged two to a node along the upper stems, the corollas blue to purple. He recognized eleven species in his concept of sect. *Resinosa*, one of these (*Scutellaria potosina* Brandegee) comprised by three subspecific categories. Since his 1942 treatment, and prior to the present, only four additional species have been proposed for the section: *S. laevis* Shinners, *S. carmenensis* Henrickson, *S. thieretii* Shinners, and *S. melanquitensis* P.H. Valencia. I recognized the first two as belonging to the sect. *Resinosa* but would include the latter in the sect. *Spinosa*. *Scutellaria thieretii* is treated as synonymous with *S. drummondii* Benth.

The present study resulted from efforts to identify miscellaneous collections from northern México. In this process it became clear that numerous collections from that region assembled since Epling's 1942 treatment represented undescribed taxa. To provide names for these novelties it became necessary to borrow material of the sect. *Resinosa* from most of the larger American herbaria (*cf.* Acknowledgments), including types. I had not supposed that this task would become so arduous and time consuming or I might have simply provided a provisional identification of the plants concerned and let it go at that. But the challenge prevailed and as a result I have recognized 26 taxa

as belonging to the sect. *Resinosa*, these distributed among nineteen species and nine varieties; this includes nine new species and seven new varieties. Subspecific taxa are not recognized.

## CHARACTER CONSIDERATIONS

HABIT – in the sect. *Resinosa* most taxa are perennial or annual herbs, the former predominating. Three annuals are recognized: *Scutellaria drummondii*, *S. texana* B.L. Turner, and *S. bartlettii* B.L. Turner. The latter three species possess relatively small, shallow, tap roots but occasional late-persisting plants may appear perennial. In northcentral Texas, *S. drummondii* appears to hybridize (either past, or present) with *S. wrightii* A. Gray. The resultant hybrids, or their hypothetical backcross derivatives in the direction of *S. drummondii*, apparently produce short-lived perennials reminiscent of the latter.

Perennial species may produce stems from lignescent, often branched tap roots, or else produce offshoots via rhizomes. I suspect that most of the perennial species will produce at least short rhizomes, but some of them produce very elongate slender rhizomes. Needless to say, when the perennials flower the first growing season they will appear to be annual.

VESTITURE – Epling (1942) placed much emphasis upon vestiture in his recognition of taxa, and I too have found this to be one of the more useful characters for taxonomic purposes. Several species are characterized by the direction along the stems in which the hairs are bent, be these downwards (retrorse) or upwards (antrorse). Apparently, relatively few genes control such orientation since upon rare occasions specimens with antrorse vestiture will occur in a population having only retrorse vestiture. For example, among several hundred or more collections of *Scutellaria drummondii* (which has nearly always spreading or downcurved hairs) only two specimens were found with upswept hairs, both occurring on sheets having specimens with downcurved hairs (Brazos Co., Texas, *Curry 113* [UC]; Navarro Co., Texas, *Joor s.n.* [MO]).

LEAVES – Epling distinguished sect. *Resinosa* largely by leaf characters: relatively small leaves with mostly short petioles and entire margins. Nevertheless occasional species will display crenate or serrulate leaves, often markedly so (e.g., *Scutellaria fruticetorum* Epling). Indeed, both entire and crenulodentate leaf margins may occur among populations within a single species (e.g., *S. muzquiziana* B.L. Turner). A tendency for leaf reduction at the apices of stems occurs in some taxa (e.g., *S. stewartii* B.L. Turner and *S. fruticetorum*), suggesting that the taxonomic distinctions between sections within *Scutellaria* are not especially strong, since leaf reduction along with crenulate leaves with well developed petioles were characters used by Epling to distinguish between sections *Galericulatia* and *Lateriflorae*. That the American sections of *Scutellaria* are to some extent artificially delimited is implicit in the many hypothetical

diagrams provided by Epling purporting to show specific relationships *within* the various sections recognized by him.

CALYCES AND COROLLAS – Characters of the calyces and corollas are difficult to assess in *Scutellaria* when working with herbarium material because of their change during development, contortion upon drying, and general fragility. Corolla size is especially variable, both among and within species as noted by Epling. I agree, in general, with his assessments and have used corolla shape and size to only a limited extent in my treatment.

NUTLETS – While largely ignored by Epling, nutlet size, color, shape, and especially ornamentation has proven to be perhaps the best set of characters by which to discriminate among closely related species, as first emphasized by Penland (1924) who constructed an analytical key to 21 species of American *Scutellaria* using only characters of the nutlet. Strangely, Epling (1942) largely ignored Penland's treatment but subsequent workers using Scanning Electron Microscopy (SEM) have reaffirmed the value of nutlet characters for taxonomic purposes in *Scutellaria* (e.g., Lane 1983; Olmstead 1990). Nutlet characters have proven very useful in my own specific evaluations, and these will be discussed in more detail in a further SEM study of nutlets within section *Resinosa* and related cohorts (Turner & Delprete, in prep.).

## *SCUTELLARIA*, SECTION *RESINOSA*

*Scutellaria* sect. *Resinosa* C. Epling, Univ. Calif. Publ. Bot. 20:57. 1942.

Annual or perennial herbs. Stems mostly simple, when perennial arising from ligneous often branched tap roots, or less often from elongate slender rhizomes. Leaves opposite throughout, those along the upper portions only rarely reduced to bracts, subsessile to shortly petiolate, the blades mostly entire or nearly so, rarely crenulodentate. Flowers axillary, mostly arranged opposite and two to a node along the upper 1/2 of the stem. Scutellum broader than high. Corollas blue to lavender, purplish white, bilabiate, the tube usually broad, the upper lip strongly galeate, patchily pilose within, usually below the stamens, rarely broadly annulate. Nutlets with surfaces variously ornate (granulose, tessellate, paxillate, papillose, or with erect or subimbricate lamellae).

Type species: *Scutellaria resinosa* Torrey.

## ARTIFICIAL KEY TO SPECIES

1. Plants of U.S.A. ..... (2)

1. Plants of México. ..... (9)

2. Plants annual. ....(3)

2. Plants perennial. ....(4)

3. Nutlets ornamented with flattened overlapping enations (lamellate). .... ....*S. drummondii*

3. Nutlets ornamented with conical or domed enations (papillate). *S. texana*

4. Plants glabrous or nearly so. ....(5)

4. Plants markedly pubescent. ....(6)

5. Nutlets tessellate; Arizona. ....*S. potosina*

5. Nutlets papillate; trans-Pecos Texas. ....*S. laevis*

6. Vestiture of stem 0.05-0.10 mm high or less, the hairs closely appressed-arcuate. ....*S. wrightii*

6. Vestiture of stems 0.1-0.3 mm high, the hairs spreading, either stiffly erect or bent downwards but not clearly arcuate. ....(7)

7. Nutlets papillate; southernmost Texas. ....*S. muriculata*

7. Nutlets tessellate or merely rugose. ....(8)

8. Vestiture of stem densely short-pubescent with mostly stiffly erect or slightly deflexed eglandular hairs ca. 0.15 mm high; northwestern Texas, Oklahoma, and Kansas. ....*S. resinosa*

8. Vestiture of stem 0.2-0.6 mm high, variously pubescent with mostly down-turned eglandular hairs, or the latter variously interspersed with longer glandular hairs, the latter mostly 0.2-0.6 mm high; not in northcentral Texas. ....(9)

9(1). Plants annual (late-persisting plants may appear perennial with thickened tap roots). ....(10)

9. Plants perennial (first year growth appearing annual), tap roots woody and lignescent or else rhizomatous. ....(12)

10. Nutlets with mostly lamellate overlapping enations. *S. drummondii*

10. Nutlets tessellate, papillate, rugose, or with variously rounded enations. ....(11)

11. Midstem leaves with petioles mostly 1-2 cm long; blades mostly broadly elliptical to rounded; nutlets rugose to tessellate; Tamaulipas. .... ....*S. bartlettii*

11. Midstem leaves with petioles mostly 0.5-1.0 cm long; blades mostly ovate; nutlets papillate; Coahuila, Nuevo León. ..... *S. texana*

    12. Vestiture of stem densely and uniformly pubescent with arcuate-strigose eglandular hairs ca. 0.1 mm high, the hairs not ascending or erect; N. Coahuila. ..... *S. wrightii*

    12. Vestiture various, but not as described in the above. ..... (13)

13. Stem hairs, many or most of them, clearly appressed upwards, or bending upwards. ..... (14)

13. Stem hairs spreading at right angles or appressed downwards, or bending downwards. ..... (19)

    14. Stems and leaves densely pilose-pubescent, giving a loose-velvety appearance to the foliage under magnification; Nuevo León. ..... ..... *S. anomala*

    14. Stems and leaves not as described in the above. ..... (15)

15. Midstem leaves, some or most of them, subdeltoid to subcordate, the margins crenate, their petioles mostly 6-10 mm long; Chihuahua. *S. alata*

15. Midstem leaves not as described in the above. ..... (16)

    16. Midstem leaves broadly ovate to oval, mostly 1.0-1.2 times as long as wide, sessile or nearly so; stems sparsely and unevenly pubescent throughout with minute hairs; corollas 20-25 mm long; Durango. ..... *S. durangensis*

    16. Midstem leaves ovate to elliptic, mostly 1.5-2.0 times as long as wide, usually distinctly petiolate; stems densely and evenly pubescent with very short upturned hairs or very unevenly pubescent with multiseptate trichomes 0.2-1.0 mm long; corollas 10-18 mm long; widespread. ..... (17)

17. Vestiture of stems and leaves uniformly pubescent with densely packed up-curved hairs ca. 0.1 mm high; Coahuila (near Saltillo). ..*S. chiangii*

17. Vestiture of stems and leaves not as described in the above; widespread. ..... (18)

    18. Midstem leaves with petioles mostly 3-8 mm long; stems moderately pubescent with widely spreading hairs, the latter 0.5-1.0 mm long; nutlets rugose, the enations rounded apically; arid habitats in Coahuila. ..... *S. stewartii*

18. Midstem leaves with petioles nearly 1-3 mm long; stems sparsely pubescent with mostly appressed upturned hairs, the latter 0.2-0.5 mm high; nutlets ± tessellate, the enations flattened apically; widespread in mesic habitats but not in Coahuila. ..... *S. hispidula*

19(13). Vestiture of stems minutely and densely beset with microscopic spreading hairs 0.05 mm high or less, the foliage appearing glabrous to the unaided eye; nutlets papillose; Mpio. Aramberra, Nuevo León. . . ..... *S. aramberrana*

19. Vestiture of stems and foliage not as described in the above; nutlets tessellate to variously rugose. .....(20)

20. Midstem leaves mostly sessile or subsessile, the margins entire; Mpio. Muzquiz, Coahuila. ..... *S. mulleri*

20. Midstem leaves with petioles mostly 2-10 mm long, the margins to some extent crenulate. .....(21)

21. Stems arising from ligneous tap roots. .....(22)

21. Stems arising from slender rhizomes. .....(24)

22. Midstem leaves mostly 1.5-4.0 cm long, the blades subdeltoid to broadly ovate with often crenulate margins; nutlets mostly rugose. . .....(23)

22. Midstem leaves various but not as described in the above; nutlets tessellate. ..... *S. potosina*

23. Vestiture of stems with an upper layer of long glandular trichomes and below these a layer of very short eglandular trichomes; nutlets rugose; N. Coahuila. ..... *S. muzquiziana*

23. Vestiture of stems with glandular trichomes only; nutlets tessellate; Nuevo León, about Monterrey. ..... *S. monterreyana*

24. Vestiture of stems with mostly strongly down curved fine hairs 0.2-0.4 mm high; NE Coahuila. ..... *S. carmenensis*

24. Vestiture of stem with mostly widely spreading coarse trichomes 1.0-1.8 mm high; San Luis Potosí (near Cd. Maiz). *S. fruticetorum*

SCUTELLARIA ALATA M.E. Jones, Map, Figure 2.

*Scutellaria alata* M.E. Jones, Contr. West. Bot. 12:70. 1908. TYPE: MEXICO. Chihuahua: Sierra Madre Mts., Guayanopa Canyon, 6000 ft, 24 Sep 1903, *M.E. Jones s.n.* (HOLOTYPE: POM; Isotypes: CAS-DS!,UC!,US!).

This taxon superficially resembles *Scutellaria potosina* var. *tessellata* (Epling) B.L. Turner, both in habit and type of vestiture, but is readily distinguished from the latter by its upturned stem hairs and rugose ornamented nutlets (vs. hairs downturned and nutlets tessellate).

Only a single collection has been assembled since Epling's (1942) treatment, who knew it only from type material: MEXICO. Chihuahua: Cerro del Nido complex, 7.5 road mi from W Bella Vista on Mesa La Boquilla (29°04′30″ N - 106°29′20″ W), base of cliff, 2020 m, 15 Jul 1981, *Worthington 7318* (ARIZ,UTEP).

SCUTELLARIA ANOMALA Epling, Map, Figure 2.

*Scutellaria anomala* Epling, Univ. Calif. Publ. Bot. 20:66. 1942. TYPE: MEXICO. Nuevo León: Mpio. Villa Santiago, Puerto on Sierra de la Cebolla between Protrero Redondo and Casillas, 7 Jul 1935, *C.H. Mueller 2154* (HOLOTYPE: UC; Isotypes: F!,GH!,MEXU!,MICH!,MO!,TEX!).

This taxon is distinguished by its densely puberulent vestiture, most of the hairs curving upwards, long-petiolate leaves, and large nutlets (ca. 1.5 mm long) with papillate ornamentation. It is apparently most closely related to *Scutellaria stewartii*, largely by habit, leaf shape, upturned vestiture, and nutlet ornamentation.

Since Epling's (1942) treatment (in which *Scutellaria anomala* was known only by type material), a single additional collection has come to the fore: MEXICO. Nuevo León: Mpio. Galeana, Galeana Canyon, 6 mi below Iturbide, 3650 ft, 30 Aug 1940, *Shreve & Tinkham 9779* (GH).

SCUTELLARIA ARAMBERRANA B.L. Turner, Map, Figure 2.

**Scutellaria aramberrana** B.L. Turner, *sp. nov.* TYPE: MEXICO. Nue-vo León: Mpio. Aramberri, Cerro Grande, rocky hillside in pine-oak forest, 2100 m, 10 Jul 1986, *G.B. Hinton et al. 18999* (HOLOTYPE: TEX!).

*Scutellariae potosinae* Brandegee var. *potosinae* similis sed vestimento caulium minute hispidulo ca. 0.05 mm alto et pagina nucularum papillosa (vs. tessellata) differt.

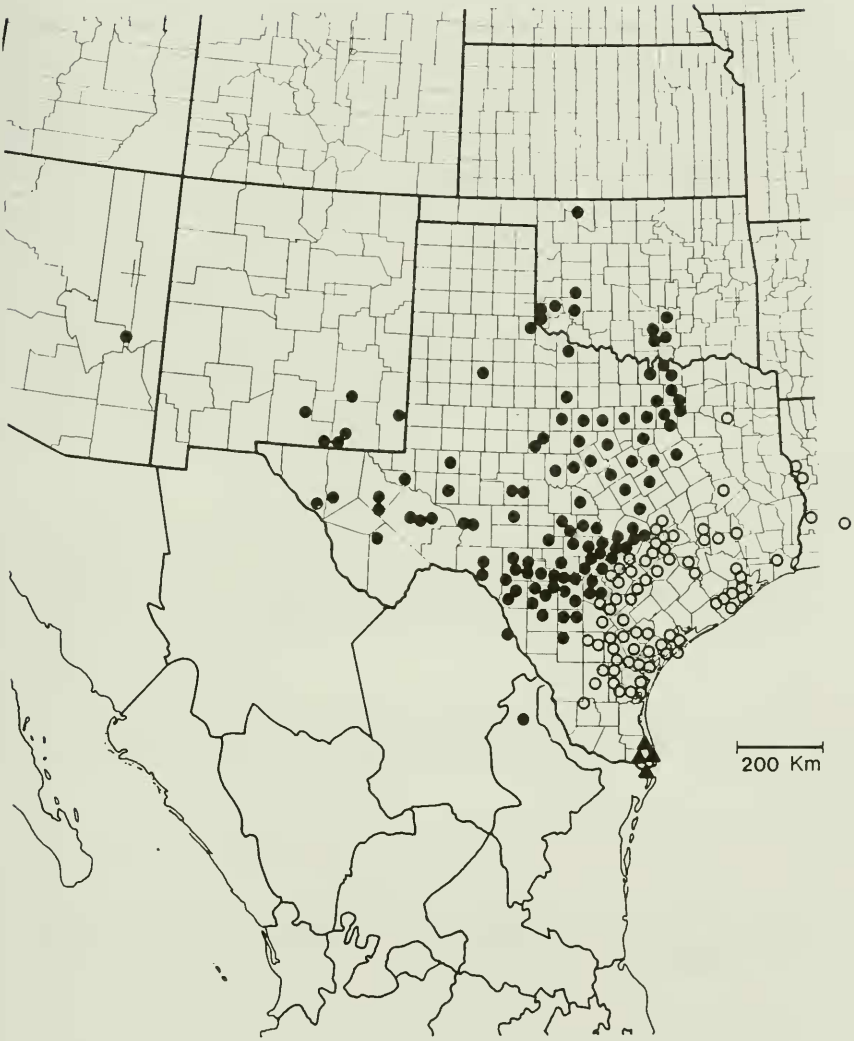


Figure 1. Distribution of *Scutellaria drummondii*: var. *drummondii* (open circles); var. *edwardsiana* (closed circles); var. *runyonii* (closed triangles).


Figure 2. Distribution of *Scutellaria* spp.: *S. alata* (open triangles); *S. anomala* (closed triangles); *S. aramberrana* (open circles); *S. stewartii* (closed circles).

Perennial erect rhizomatous herbs 10-20 cm high. Stems minutely hispidulous, the hairs scarcely 0.05 mm long, mostly erect or slightly downcurved, the surfaces abundantly arrayed with globular atomiferous glands. Midstem leaves mostly 12-20 mm long, 5-8 mm wide; petioles 1-2 mm long; blades ovate to ovate-lanceolate, very sparsely pubescent with minute recurved hairs, the margins entire. Flowers arranged in pairs in the upper leaf axils, the corollas mauve to purple, 15-17 mm long. Calyces sparsely pubescent like the leaves, moderately covered with atomiferous glands. Nutlets (immature) papillate.

ADDITIONAL SPECIMEN EXAMINED: MEXICO. Nuevo León: Mpio. Aramberri, W of La Escondida, 2200 m, oak woods, 3 Aug 1993, *G.B. Hinton et al. 23169* (TEX!).

This taxon is immediately recognized by its seemingly glabrous condition, but examination at magnification (× 40) readily reveals a minutely hispidulous vestiture ca. 0.05 mm high. In habit it is superficially similar to *Scutellaria potosina* but has quite different nutlets, the surface ornamentation being minutely papillate (vs. tessellate).

SCUTELLARIA BARTLETTII B.L. Turner, Map, Figure 3.

**Scutellaria bartlettii** B.L. Turner, *sp. nov.* TYPE: MEXICO. Tamaulipas: Sierra de San Carlos, vicinity of San Carlos, Cerro de los Armadillos, 9 Jul 1930, *H.H. Bartlett 10199* (HOLOTYPE: MICH!; Isotypes: CAS-DS!,F!,US!).

*Scutellarine monterreyanae* B.L. Turner similis sed duratione plantarum annua (vs. perenni) et vestimento caulium ca. 0.4-0.5 mm alto (vs. 0.6-1.3 mm) differt.

Annual erect herbs mostly 15-40 cm high, the stems arising from slender tap roots (larger when over-wintering) and branched from the base. Stems densely glandular-pubescent, the vestiture mostly 0.4-0.5 mm high. Midstem leaves mostly 1.5-3.0 cm long; petioles mostly 1-2 cm long; blades broadly ovate to oval, weakly crenulate to entire, pubescent like the stems. Flowers paired and axillary along the upper 1/2 of the stems. Flowering calyces ca. 3 mm long. Corollas lavender to purple, mostly 8-12 mm long. Nutlets black, 1.0-1.5 mm long, rugose (appearing tessellate with age), the apical enations rounded, but the lateral enations often reflexed and somewhat laminate as in *Scutellaria drummondii.*

ADDITIONAL SPECIMENS EXAMINED: MEXICO. Tamaulipas: Sierra San Carlos, vicinity of El Milagro, 5 Aug 1930, *Bartlett 11118* (MICH); 13 mi SW of Cd. Victoria, ca. 1000 m, 13 May 1949, *McVaugh 10518* (MICH); ca. 5 mi S of San Carlos, N side of Bufo El Diente, steep slopes among scattered

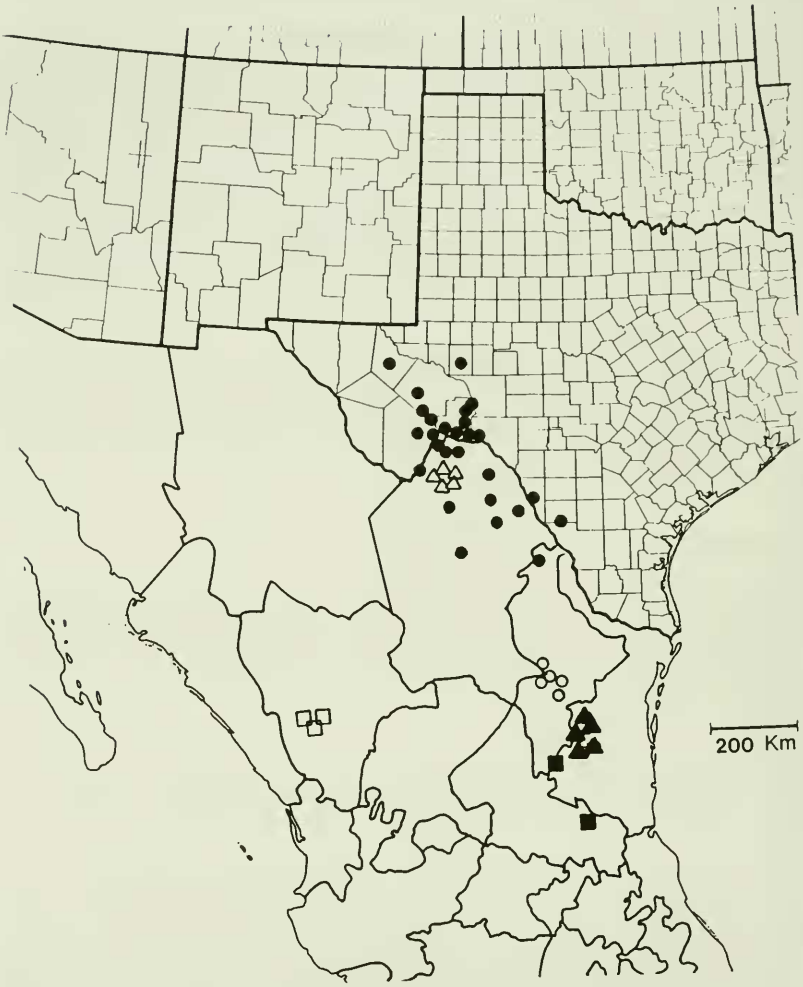


Figure 3. Distribution of *Scutellaria* spp.: *S. bartlettii* (closed triangles); *S. carmenensis* (open triangles); *S. durangensis* (open squares); *S. fruticetorum* (closed squares); *S. monterreyana* (open circles); *S. texana* (closed circles).


Figure 4. Distribution of *Scutellaria* spp.: *S. chiangii* (closed triangles); *S. hispidula* (closed circles); *S. mulleri* (open triangles); *S. muzquiziana* (open circles).

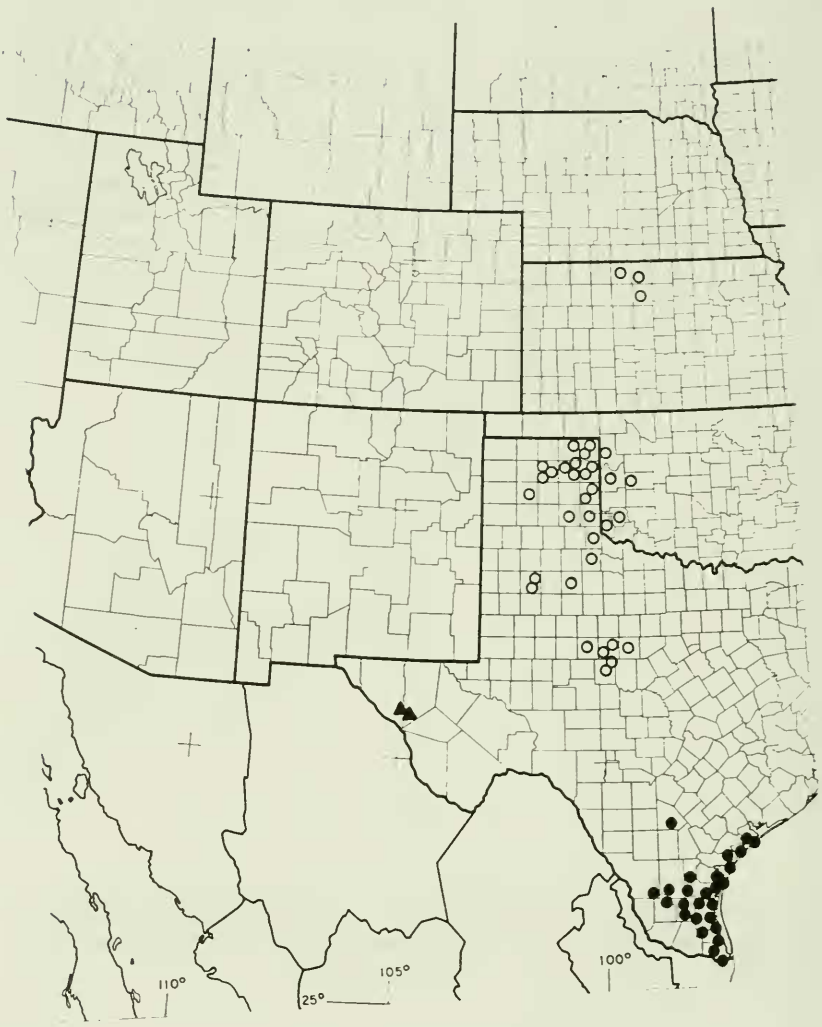


Figure 5. Distribution of *Scutellaria* spp.: *S. laevis* (closed triangles); *S. muricu-lata* (closed circles); *S. resinosa* (open circles).

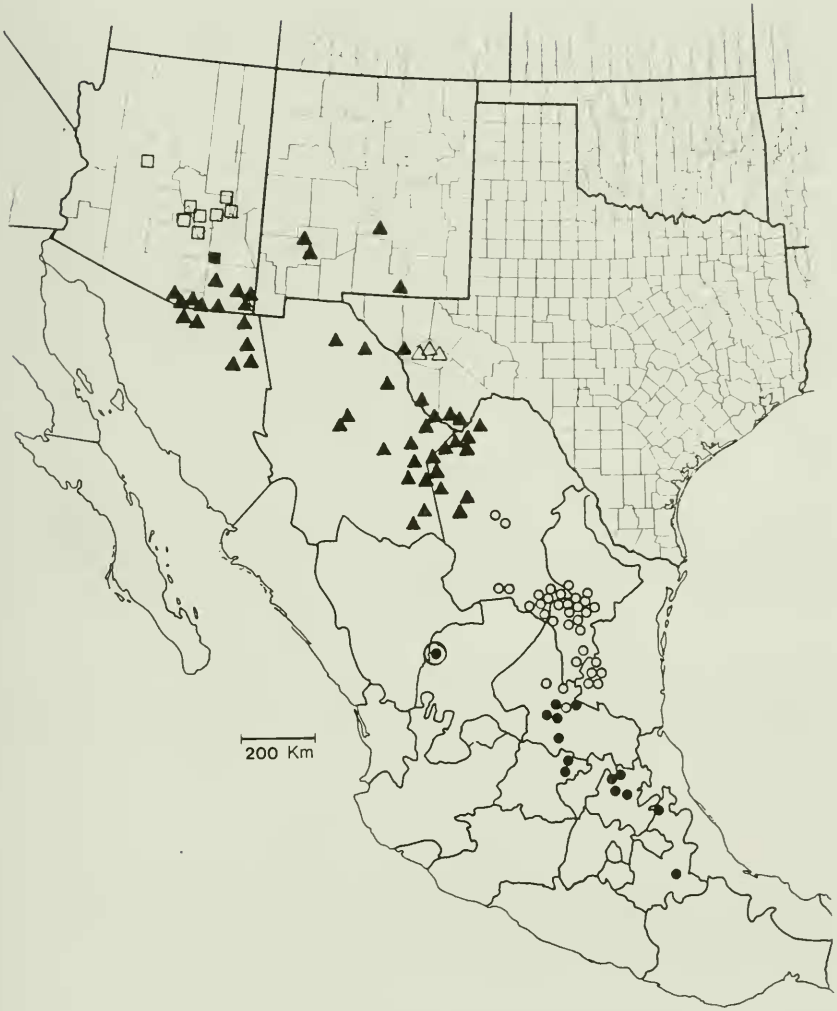


Figure 6. Distribution of *Scutellaria potosina*: var. *davisiana* (open triangles); var. *grahamiana* (closed squares) var. *novoleonensis* (open circles); var. *platyphylla* (open circles); var. *potosina* (closed circles); var. *tessellata* (closed triangles); var. *zacatecensis* (bulls eye).

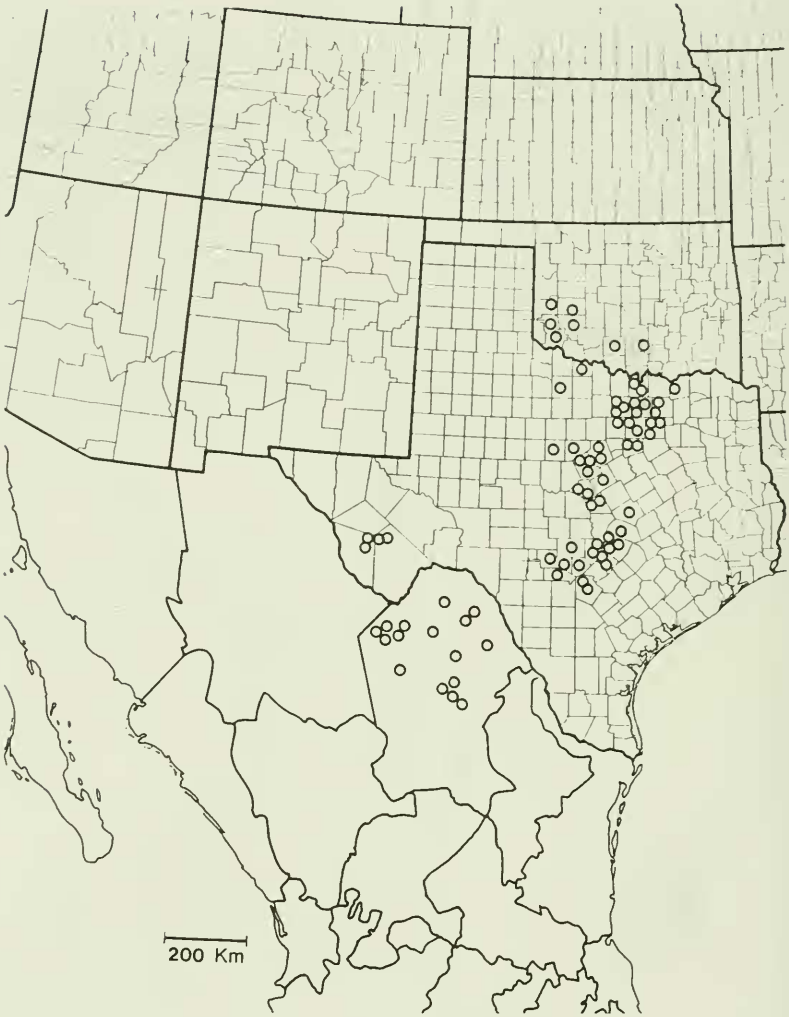


Figure 7. Distribution of *Scutellaria wrightii*.

oaks in rich soils, 770 m, 17 Jun 1987, *Nesom 6061* (TEX); mountain sides S of Cd. Victoria, 1000 m, 9 Apr 1926, *Runyon 891* (TEX,US); Cd. Victoria, Mar 1930, *Viereck 169* (US); Jaumave, Jul 1930, *Viereck 614* (US); San Vicente-Jaumave, Mar 1921, *von Rozynski 267* (ARIZ); Jaumave, 1932, *von Rozynski 419, 431, 544* (F).

This annual taxon occurs along the front range of the Sierra Madre Oriental from about Cd. Victoria, Tamaulipas northwards to the Sierra de San Carlos. Epling (1942), by annotation, apparently included this species in his concept of *Scutellaria microphylla* Benth., but he also annotated at least one sheet (*Viereck 614* [US]) as *S. potosina* var. *potosina*.

*Scutellaria bartlettii* combines characters of *S. texana* and *S. monterreyana* B.L. Turner, having the shorter vestiture and annual condition of the former, but the general habit, leaf shape, and nutlet ornamentation of the latter. All of these taxa, with additional field work, might be reduced to varietal rank, but present morphogeographical evidence suggests specific status.

SCUTELLARIA CARMENENSIS Henrickson, Map, Figure 3.

*Scutellaria carmenensis* Henrickson, Aliso 12:521. 1989. TYPE: MEXICO. Coahuila: Sierra Maderas del Carmen, upper slope and ridge of peak in upper portion of Oso Canyon, 26 May 1975, *D.A. Riskind & T.F. Patterson 1783* (HOLOTYPE: LL!).

This taxon is apparently restricted to the Sierra del Carmen of northwestern Coahuila. It is seemingly closest to *Scutellaria muzquiziana*, possessing the corollas and nutlet ornamentation of that species, but readily distinguished from it by habit and vestiture.

SCUTELLARIA CHIANGII B.L. Turner, Map, Figure 4.

**Scutellaria chiangii** B.L. Turner, *sp. nov.* TYPE: MEXICO. Coahuila: Las Playas, ca. 50 km S of Saltillo along highway 50 (25°15′ N, 100°48′ W), pinyon-pine woodlands, limestone slopes in calcareous gravelly soils, 2050-2100 m, 24 May 1973, *M.C. Johnston, T.L. Wendt, & F. Chiang 11212B* (HOLOTYPE: TEX!).

*Scutellariae potosinae* Brandegee var. *potosinae* sed differet trichomatibus caulium antrorsis (vs. retrorsis) et caulibus rhizomatibus brevibus validis (vs. radice palari lignescenti) exorientibus.

Suffruticose multistemmed perennial herbs from short thick rhizomes. Stems recumbent below, forming rounded bushes, densely and evenly hispidulous

with *upturned* eglandular hairs ca. 0.1 mm high. Midstem leaves mostly 4-6 mm long, 2-3 mm wide; petioles 0.5-1.0 mm long; blades narrowly ovate, densely pubescent throughout like the stems, faintly 3-nervate, the margins entire. Flowers mostly 10-15, arranged in axillary pairs along most of the stem length, their pedicels 1.0-1.5 mm long. Flowering calyces 3-4 mm long, in fruit 5-6 mm long, the scutellum pronounced, ca. 3 mm high, ca. 5 mm across. Corollas bluish-purple, ca. 15 mm long. Nutlets ca. 1.3 mm long, black, tessellate.

This is a weird plant known only from the type. It is remarkable in habit and vestiture, the stems densely and minutely hispidulous with upturned hairs arising from short thick rhizomes. In addition, the leaves are uniformly small from the base of stems to near the apices. It superficially resembles *Scutellaria hispidula* B.L. Robins. but on nutlet characters appears to be closest to *S. potosina*, differing from that species in leaf shape and size, and upturned vestiture.

I have named the species for Fernando Chiang, a Mexican citizen who obtained his doctorate degree at the University of Texas, Austin, working on the difficult genus *Lycium* (Solanaceae). Fernando is a trim man about 5 ft 10 inches wearing an intellectual smile and an easy grin. I never met a person who didn't enjoy his company, mainly because his generosity and kindness extended to most everyone. He even made allowances for my faults, which takes much latitude. The world needs more such Chiangs, both as friends and for eponyms.

## SCUTELLARIA DRUMMONDII Benth.

I recognize three weakly differentiated morphogeographical varieties of this complex as outlined below. Collections of these abound in herbaria, especially from Texas where the species is largely centered. Exceptions to the key characters utilized for their recognition occasionally occur, but I estimate that approximately 95% of the collections can be assigned to one or the other taxon by the characters chosen, which is a significant figure as judged by scientists generally, hence my decision to bestow the names concerned.

### KEY TO VARIETIES

1. Pubescence of mid and lower stems mostly with eglandular hairs (intergrades with var. *edwardsiana* occur along the eastern edge of the Edwards Plateau); eglandular stems also abound in northcentral Texas where putative hybrids and their derivatives between var. *edwardsiana* and *S. wrightii* are thought to occur. ..... var. *edwardsiana*

1. Pubescence of mid and lower stems to some considerable extent glandular-pubescent. the longer-spreading trichomes bearing minute capitate glands at their apices; Edwards Plateau of Texas and westwards, and southernmost Texas (Cameron Co. and adjacent México). .....(2)

   2. Plants mostly much-branched from the very base, the lower stems on older plants recumbent; nutlets mostly 0.9-1.1 mm across, the lamellar ornamentation mostly erect, scarcely overlapping; Cameron and Willacy counties, Texas (and adjacent México?). var. *runyonii*

   2. Plants not usually as described in the above; nutlets mostly 1.1-1.5 mm across, the lamellar ornamentations mostly to some extent overlapping or imbricate; widespread from central Texas westwards but not in Cameron Co. .....var. *drummondii*

*Scutellaria drummondii* Benth. var. *drummondii*, *Lab. Gen. & Sp.* 441. 1834. Map, Figure 1. TYPE: U.S.A. Texas: Austin Co., along the Rio Brazos, 1833, *T. Drummond s.n.* (HOLOTYPE: K; Photoholotype: US!).

*Scutellaria helleri* Small, *Man. Fl. SE. US.* 1024. 1903. TYPE: U.S.A. Texas: Nueces Co., Corpus Christi, sea level to 40 ft., 28-30 Mar 1894, *A.A. Heller 1503* (HOLOTYPE: NY; Photoholotypes: F!,US!; Isotypes: F!,GH!,MICH!,MO!,UC!,US!).

*Scutellaria thieretii* Shinners, Sida 1:251. 1964. TYPE: U.S.A. Louisiana: Vermilion Parish, Pecan Island, roadside in shell sand, 13 Jul 1963, *J.W. Theiret 16162* (HOLOTYPE: SMU-BRIT!; Isotype: USL).

Epling (1948) recognized a single widespread highly variable *Scutellaria drummondii* without infraspecific categories. He did, however, refer to localized pockets of variation in the species, especially calling attention to variation in corolla size, which appears not to be correlated with the morphogeographic variants recognized in the present treatment.

The considerable intergradation between var. *drummondii* and var. *edwardsiana* is discussed in more detail under the latter. Populations with glandular pubescence, bushy habits and smaller, atypically ornamented, nutlets occur in southernmost Texas and I have dubbed these var. *runyonii*. Collections referred to as *Scutellaria helleri* are habitally like var. *runyonii* but have the general vestiture and seed ornamentation of var. *drummondii*.

I am unable to recognize the recently described *Scutellaria thieretii*. Characters used by Shinners to distinguish this from *S. drummondii* are mostly illusionary: larger, thicker, less petiolate, less reduced, upper leaves. In short, *S. thieretii* falls well within the variation of *S. d.* var. *drummondii*, as suspected by MacRoberts (1984).

**Scutellaria drummondii** Benth. var. **edwardsiana** B.L. Turner, *var. nov.* Map, Figure 1. TYPE: U.S.A. Texas: Val Verde Co., rocky limestone hills above dam at foot of Devils Lake, ca. 20 m NNW of Del Rio, 31 Mar 1947, *R.M. McVaugh 7724* (HOLOTYPE: TEX!; Isotypes: CAS-DS!,F!,GH!,MICH!).

*Scutellariae drummondii* Benth. var. *drummondii* similis sed vestimento plerumque biaequato aequore supero trichomatibus reflexis eglandulosisque ac aequore infero trichomatibus majoribus glandulosis (vs. vestimentum uniformiter eglandulosum) differt.

This taxon is related to the closely allopatric var. *drummondii* but is usually readily distinguished by its glandular vestiture and longer capitate-glandular hairs mostly spreading at right angles to the stem.

Occasional individuals and/or possibly localized populations of var. *edwardsiana* in central Texas on granitic soils may possess eglandular hairs (*e.g.*, Gillespie Co., *Correll 21122, 27186* LL, *Crutchfield 1281* LL; etc.), but these few exceptional plants hardly vitiate recognition of var. *edwardsiana* as a widespread calcareous taxon of more western regions easily recognized by its mostly glandular vestiture or intermixed glandular and eglandular hairs. Indeed, the longest eglandular hairs of var. *edwardsiana* tend to be shorter than the longest eglandular hairs of var. *drummondii* (0.5-1.0 mm long vs. 1.0-2.0 mm long, respectively). Likewise, the existence of occasional plants with glandular hairs within the otherwise eglandular populations occurring in the sandy or sandy-loam soils of eastern Texas hardly vitiates the reality of that taxon.

Intergradation between var. *edwardsiana* and var. *drummondii* occurs primarily along the eastern most front of the Edwards Plateau (e.g., *Correll 29176* US; etc.), especially in sandy alluvial soils along the Colorado River drainage system as it passes through the large outcrop of granitic rock of the Central Mineral Region, most of which weathers to sandy soils. This perhaps accounts for the occurrence of localized populations of plants (cited above) with glandular hairs in the latter region: sandy river banks should provide for the intrusion of genes upstream through the distribution of var. *edwardsiana*, with or without gene flow (assuming some peripheral hybridization in regions of contact).

Finally it should be noted that in Collin, Dallas, and Grayson counties of northcentral Texas and adjacent Oklahoma there exists a large set of collection (50 plus sheets) which have very short downcurved hairs and only a smattering of glandular hairs, if that. I take these to be hybrid derivatives of ancestral crosses (if not recent) between *Scutellaria drummondii* and *S. resinosa* Torrey, as noted under the latter. Such plants possess calyces and nutlets of *S. drummondii*, but a vestiture and habit intermediate between the two taxa. So far as

known, most of these collections occur in predominately calcareous soils; Lane (by annotation) also noted that plants from this region strongly approached *S. resinosa* (including *S. wrightii* in his concept; cf. Lane 1983).

Occasional putative hybrids between *Scutellaria drummondii* and *S. wrightii* apparently grow intermixed (e.g., *Metz 592* [UC], from Bexar Co., Texas, the sheet containing mixed collections of both taxa plus putative hybrids and or derivatives therefrom).

**Scutellaria drummondii** Benth. var. **runyonii** B.L. Turner, *var. nov.* Map, Figure 1. TYPE: U.S.A. Texas: Cameron Co., "Erect diffuse herb, soon branching and becoming diffuse. Barreda Station in woodlands.", 11 Apr 1941, *R. Runyon 2525* (HOLOTYPE: TEX!; Isotype: TEX!).

*Scutellariae drummondii* Benth. var. *edwardsianae* B.L. Turner similis sed plantis multo ramosis ad basim et pagina nucularum lamellis erectis (vs. lateralibus imbricatisque) differt.

ADDITIONAL REPRESENTATIVE SPECIMENS: U.S.A. Texas: Cameron Co.: *Correll 28988* (LL); *Cottrell s.n.* (TEX); *Lundell 14837* (LL,TEX,UC); *Lundell & Lundell 10691* (MICH); *Lundell & Lundell 10763* (LL,MICH,UC); *Runyon 1458, 2063, 2524* (all TEX). Willacy Co.: Raymondville, 3 Mar 1925, *Runyon 703* (TEX,UC).

This taxon has the vestiture of var. *edwardsiana*, but has a bushier habit and smaller, less ornate, nutlets, as discussed under the latter. It intergrades northwards along the sandy coastal soils into var. *drummondii*, but appears to be well-separated geographically from var. *edwardsiana*, as indicated in Figure 1.

The variety is named for its earliest collector, Mr. Robert Runyon, well known amateur botanist from Brownsville, Texas, having once served as the mayor of that city. He first collected the plant in Willacy County, and subsequently numerous times in Cameron County. The taxon probably occurs in adjacent México, but I have not examined such collections.

The var. *runyonii* occurs with or near the endemic perennial, *Scutellaria muriculata*, and occasional plants of the former have been cited as the latter (e.g., *Cottrell s.n.*, so cited by Epling [1942]).

SCUTELLARIA DURANGENSIS B.L. Turner, Map, Figure 3.

**Scutellaria durangensis** B.L. Turner, *sp. nov.* TYPE: MEXICO. Durango: E slopes of Cerro Prieto (ca. 20 airline mi. W of Otinapa), dry, open, rocky woodlands of oak, pine, and *Arbutus*, "Plants seen occasionally in rather large patches," 3000-3100 m, 10 Jul 1950, *James H. Maysilles 7352* (HOLOTYPE: MICH!; Isotype: CAS!).

*Scutellariae hispidulae* B.L. Robins. similis sed differt foliis plerumque majoribus ovalibus (vs. ovatis), caulibus minute pubescentibus vestimento ca. 0.1 mm alto vel minus (vs. 0.2-1.0 mm), et corollis majoribus (20-25 mm longis vs. 10-16 mm).

Erect rhizomatous perennial herbs 10-20 cm high. Stems minutely scabridulous with arcuate upturned hairs 0.1 mm high or less. Leaves sessile or subsessile throughout, scarcely reduced upwards, those at midstem mostly 12-18 mm long, 7-18 mm wide, broadly ovate to, less often, obovate, glabrous or nearly so on the faces, the margins hispidulous like the stems. Flowers 2-6 axillary pairs arranged along the upper 1/4-1/3 of the stems. Calyces 5-6 mm long, sparsely hispidulous. Corollas purple, 20-25 mm long. Nutlets immature.

ADDITIONAL SPECIMEN EXAMINED: MEXICO. Durango: Coyotes Hacienda, 63 road mi. WSW of Cd. Durango, 2400-2500 m, 16 Jul 1955, *Maysilles 7855* (MICH).

This taxon is clearly closely related to *Scutellaria hispidula* but is readily distinguished from that species by its relatively broader, more oval leaves, minutely hispidulous vestiture and larger corollas (mostly 20-25 mm long vs. 10-16 mm). According to label data, *S. durangensis* occurs in open meadows of pine-oak forests from 2500-3100 m while *S. hispidula* reportedly occurs at lower elevations (1500-2400 m) in oak woods and grasslands.

SCUTELLARIA FRUTICETORUM Epling, Map, Figure 3.

*Scutellaria fruticetorum* Epling, Brittonia 7:129. 1951. TYPE: MEXICO. Nuevo León: Dulces Nombres (and just E into Tamaulipas), oak-pine forests, 1700 m, 14 Jul 1948, *F.G. Meyer & D.J. Rogers 2779* (HOLOTYPE: UC-UCLA!).

This taxon is apparently confined to middle and lower montane pine-oak forests along the Gulf slopes of the Sierra Madre Oriental in southern Nuevo León, adjacent Tamaulipas and eastern San Luis Potosí.

It is likely that *Scutellaria fruticetorum* does not belong to the sect. *Resinosa*. In having markedly toothed, clearly petiolate leaves it would key to the sect. *Mixtae* in Epling's (1942) treatment, the species of which mostly occur in the southeastern U.S.A. In several other characters, however, it appears to belong to the sect. *Resinosa*, where it forms a "bridge" to sect. *Mixtae*. In their original description, however, the authors positioned the species in the sect. *Galericulatae*, although it was not accepted into this largely western U.S.A. assemblage by Olmstead (1990). Both morphologically and geographically, *S. fruticetorum* (along with *S. fraxinea* Epling) appears closely related to the sections *Mixtae* and *Lateriflorae* of the southeastern U.S.A.

*Scutellaria fruticetorum* was known to its authors by type material only. More recent collections have been obtained as follows: MEXICO. San Luis Potosí: 17 airline km NE of Cd. del Maiz, 16.2 road mi. E of El Naranjo, 1.5 mi. (by road) E of El Platanito, lower oak forest on limestone bedrock with *Quercus* spp., *Trichilia*, *Litsea*, etc., 980 m, 22 Mar 1976, *Hansen et al. 3818* (LL,MICH,US); 19 mi E of Cd. del Maiz, open oak forests, "common in area", ca. 3800 ft, 16 Jul 1963, *McGregor et al. 777* (LL).

SCUTELLARIA HISPIDULA B.L. Robins., Map, Figure 4.

*Scutellaria hispidula* B.L. Robins., Proc. Amer. Acad. Arts 26:174. 1891. TYPE: MEXICO. México: Meadows, Flor de María, 31 Aug 1890, *C.G. Pringle 3233* (HOLOTYPE: GH!; Isotypes: F!,MEXU!,MO!,UC!,US!).

*Scutellaria horridula* Epling, Univ. Calif. Publ. Bot. 20:67. 1942. TYPE: MEXICO. Chihuahua: Loreto, Río Mayo, "by margins of little streams", pine-oak woodlands, 3 Sep 1936, *Gentry 2570* (HOLOTYPE: UC-UCLA!; Isotypes: ARIZ!,F!,GH!,MO!).

Epling's (1942) concept of this widely distributed highly variable species included material from xeric regions of Coahuila that I assign to *Scutellaria stewartii*. Typical plants of *S. hispidula*, obtained from mesic meadows in the state of México, are characteristically small perennial herbs with ovate subsessile leaves, the pubescence being typically sparse and composed of mostly upturned multiseptate trichomes. As I interpret the species, it is mostly confined to the southern Central Plateau regions of México, extending westwards along the Sierra Madre Occidental to Sonora. Considering its range, relatively few collections have been made since Epling's treatment and these are cited below:

MEXICO. Sonora: Cerro Saguarivo, E of San Bernardo, along stream, 1500 m, 78 Aug 1935, *Pennell 19590* (GH). San Luis Potosí: 33 km E of San Luis Potosí, ca. 2000 m, 10 Jul 1965, *Roe 122* (LL); 20 km SE of Zaragoza, 2050 m, *Rzedowski 526* (US). Jalisco: S of Sayula, Aug 1961, *Faberge s.n.* (TEX).

*Scutellaria durangensis* is clearly closely related to *S. hispidula*, but the former is readily distinguished by its minute vestiture and large corollas.

SCUTELLARIA LAEVIS Shinners, Map, Figure 5.

*Scutellaria laevis* Shinners, Sida 1:107. 1962. TYPE: U.S.A. Texas: Culberson Co., 10 mi N of Van Horn, N slope of Beach Mt., 19 Aug 1946, *D.S. Correll 13973* (HOLOTYPE: LL!).

Several collections of this relatively rare species have been made since its original description. It appears to be largely centered in the Sierra Diablo Mts. of trans-Pecos Texas. The Sierra Diablo is a relatively small mountainous mass which parallels the Hudspeth-Culberson County border for about 100 km from near Van Horn northwards. Shinners and others described the corollas of *Scutellaria laevis* as mostly white or "white with purple lips" (*Sikes & Smith 518* [LL]) but at least some of the corollas dry to a pale bluish color (e.g., *Waterfall 5087* [GH]).

Because of its glabrous condition, this taxon superficially resembles *Scutellaria potosina* var. *grahamiana* B.L. Turner of Arizona, but the latter taxon is readily distinguished from *S. laevis* by its minutely pubescent stems, purple corollas, and tessellate nutlets (vs. papillate).

## SCUTELLARIA MONTERREYANA B.L. Turner, Map, Figure 3.

**Scutellaria monterreyana** B.L. Turner, *sp. nov.* TYPE: MEXICO. Nuevo León: Mpio. Villa Santiago, Las Ajuntas, 24 Aug 1939, *C.H. Muller 2996* (HOLOTYPE: LL!; Isotypes: F!,MICH!).

> *Scutellariae texana* B.L. Turner similis differt duratione perenni, habitu laxe ramoso, trichomatibus glandulosis multo longioribus (0.6-1.2 mm longis vs. 0.1-0.4 mm), et pagina nucularum tessellata (vs. rugosa vel verrucata).

Perennial erect herbs mostly 15-40 cm high, the stems arising from ligneous tap roots (first years growth appearing annual). Stems loosely branched, moderately to densely pubescent with glandular spreading trichomes 0.6-1.2 mm long, mostly without an understory of shorter eglandular hairs. Midstem leaves mostly 1-3 cm long, 0.8-2.0 cm wide; petioles 4-10 mm long; blades broadly ovate to oval, entire to crenulate. Flowering calyces 2.5-3.0 cm long. Flowers paired and axillary, mostly confined to the upper 1/2-1/4 of the stems. Corollas blue, mostly 10-15 mm long. Nutlets black, tessellate, ca. 1.2 mm long.

REPRESENTATIVE SPECIMENS. MEXICO. Nuevo León: Chipinque Park, near Motel, North facing slopes, pine-oak forests, *Poole 1361* (TEX); El Diente Canyon, S of Monterrey, streambed, 600-650 m, 19 Jun 1934, *Pennell 16874* (GH,US); hills near Monterrey, 18 Jun 1889, *Pringle 2712* (F).

*Scutellaria monterreyana* is represented by about 30 collections, all from the vicinity of Monterrey where it occurs in pine oak forests along the upper midslopes of the surrounding mountains and in the streambeds at lower elevations which drain them. Epling (1942) included material of this taxon (and *S. texana*) in his broad concept of *S. microphylla*. *Scutellaria monterreyana* has the general habit of *S. texana* but is readily distinguished from the latter

by its perennial, less compact, habit, much longer glandular trichomes (0.6-1.2 mm long vs. 0.1-0.4 mm), and tessellate nutlets (vs. rugose or warty).

SCUTELLARIA MULLERI B.L. Turner, Map, Figure 4.

**Scutellaria mulleri** B.L. Turner, *sp. nov.* TYPE: MEXICO. Coahuila: Mpio. Muzquiz, lower slopes of the Sierra de San Manuel, 27 Jun 1936, *F.L. Wynd & C.H. Mueller 323* (HOLOTYPE: GH!; Isotypes: ARIZ!, MICH!,MO!).

*Scutellariae muzquizianae* B.L. Turner similis sed foliis sessilibus integrisque et vestimento caulium trichomatibus plerumque patentibus vel retrorsis (vs. antrorsis) differt.

Wiry perennial herbs 30-40 cm high. Stems erect, branched from the base, moderately pubescent with slender, spreading or downcurved, glandular or eglandular multiseptate trichomes mostly 0.5-1.0 mm long. Leaves ovate-lanceolate, sessile, gradually and markedly reduced upwards, those at midstem mostly 14-18 mm long, 5-7 mm wide, 2.0-2.8 times as long as wide, moderately pubescent like the stems. Fruiting calyces ca. 6 mm long. Corollas absent. Nutlets black, ca. 1.3 mm long, rugose-tessellate.

ADDITIONAL SPECIMEN EXAMINED: MEXICO. Coahuila: Muzquiz, Spring 1935, *Marsh 158* (TEX); Muzquiz, Palm Canyon, 9 Jul 1936, *Marsh 304* (TEX,UC-UCLA).

In habit this taxon resembles *Scutellaria muzquiziana* but differs in having sessile entire, ovate-lanceolate leaves and a vestiture of mostly spreading or downcurved trichomes 0.5-1.0 mm long. Epling (1942) annotated one of the above cited isotypes (ARIZ) as *Scutellaria* ? *microphylla*, but did not cite this in his study. The Marsh collection *158* (cited above) bore the name "*Scutellaria lythroides* Standl.", an apt name, for vegetatively the species resembles the genus *Lythrum*. Epling (1942, p. 59) also makes an offhand reference to the Marsh collections but failed to give them a name.

It is a pleasure to name this species for Prof. Emeritus, Cornelius H. Muller (nee Mueller) of the University of California, Santa Barbara, well known ecologist, expert on oaks and an early collector in northeastern México.

SCUTELLARIA MURICULATA Epling, Map, Figure 5.

*Scutellaria muriculata* Epling, Univ. Calif. Publ. Bot. 20:69. 1942. TYPE: U.S.A. Texas: Cameron Co., Resaca Park, "Brownsville near south bridge, W side", 10 m, 7 Mar 1939, *R. Runyon 2044* (LECTOTYPE [selected here]: UC-UCLA!; Isolectotypes: TEX!,UC-UCLA [2 sheets]).

This species superficially resembles *Scutellaria drummondii* var. *drummondii* but is readily distinguished from the latter by its perennial recumbent habit, vestiture of uniformly short recurved hairs and very distinctive muriculate nutlets. Indeed, on an isotype sheet (TEX) the provisional name, *S. incertis* sp. nov., was proposed by some early worker, probably in reference to the muriculate nutlets.

Epling (1942) knew the species by only four collections. Since his treatment, 40 or more collections (all assembled at LL,TEX) have been made from throughout its distribution (Figure 5) where it seems confined to sandy or sandy-loam soils derived from ancestral dune sands. Collections, as yet, are not known from México.

Epling (1942) cited a single collection from Atascosa Co., Texas (*Palmer 9780* [US!]) as *Scutellaria potosina* subsp. *platyphylla* (Epling) B.L. Turner, but examination of its nutlets reveal the plants concerned to be rather typical *S. muriculata*. Isolation of this collection from its center of distribution probably misled Epling in his identification, for the taxa concerned are superficially quite similar.

SCUTELLARIA MUZQUIZIANA B.L. Turner, Map, Figure 4.

**Scutellaria muzquiziana** B.L. Turner, *sp. nov.* TYPE: MEXICO. Coahuila: Mpio. Muzquiz, Muzquiz, 12 Apr 1936, *E.M. Marsh 2116* (HOLOTYPE: TEX!; Isotype: GH!).

*Scutellariae potosinae* Brandegee var. *platyphyllae* Epling sed foliis plerumque crenulatis (vs. integris) et pagina nucularum tuberculata (vs. tessellate).

Erect perennial herbs 25-40 cm high. Stems densely pilose with spreading delicate glandular-capitate trichomes 0.5-1.0 mm long, beneath these a layer of minute delicate straight eglandular hairs 0.1 mm long or less. Midstem leaves mostly 2-4 cm long, 1.0-2.5 cm wide; petioles mostly 6-20 mm long; blades broadly ovate to subtriangular, sometimes subcordate, glandular-punctate beneath, glandular-pubescent along the veins, the margins decidedly crenulate, glandular-pubescent. Flowering calyx ca. 5 mm long, the upper lip with glandular trichomes like the stems. Corollas 15-20 mm long, the tubes broadly flaring upwards. Nutlets black, ca. 1.2 mm long, 1.0 mm wide, ornamented with somewhat downcurved rounded or obtuse tubercles.

ADDITIONAL COLLECTIONS EXAMINED: MEXICO. Coahuila: 35 air mi. S of Monclova, N side of Sierra de la Gavia, lower limestone canyon, with *Quercus*, *Cercis*, *Juglans* ...etc., 4700 ft, 2 Aug 1973, *Henrickson 11728* (LL); Muzquiz, Spring 1935, *Marsh 154* (F,TEX); 20 km ESE of Cuatro Cienegas, large limestone canyon, 24 Apr 1941, *Schroeder 151* (GH); same locality

*Schroeder 93* (GH); Rincón de María, ca. 70 mi by road NW of Muzquiz, 27 Apr 1975, *Wendt & Riskind 941* (LL); Rancho Agua Dulce, wooded canyon on eastern slopes of Sierra de San Manual, 30 Jun 1936, *Wynd & Mueller 373* (GH).

This species is superficially similar to *Scutellaria potosina* var. *platyphylla* but is readily distinguished by its crenulate, relatively long-petiolate leaves and markedly ornate nutlets, the surface ± tuberculate (vs. tessellate).

Epling (1942, p. 59) first called attention to what I have named *Scutellaria muzquiziana* in stating, "Two collections made at Muzquiz, Coahuila, by March [*sic*] (Herb. Univ. Texas) represent two probable species in addition to those described below." He was presumably referring to *Marsh 159* (fruiting specimens cited above) and *Marsh 2116* (the type), neither of which Epling annotated.

## SCUTELLARIA POTOSINA Brandegee, Map, Figure 6.

*Scutellaria potosina* Brandegee, Univ. Calif. Publ. Bot. 4:187. 1911. TYPE: MEXICO. San Luis Potosí: Minas de San Rafael, Nov 1910, *C.A. Purpus 4875* HOLOTYPE: UC!; Isotypes: F!,G!,MO!).

This is the most common widespread species of *Scutellaria* in northern México. It is exceedingly variable, but for the most part this variability can be partitioned into meaningful morphogeographical units. Epling (1942) recognized three infraspecific taxa in the complex, calling these subspecies.

I recognize two subspecies (Figure 6), subsp. *potosina* with three intergrading regional varieties; and subsp. *platyphylla*, which is monotypic and confined to central Arizona. The following key will help to distinguish among these.

### ARTIFICIAL KEY TO VARIETIES

1. Plants of Arizona. ..... (2)

1. Plants of México, New Mexico, and Texas. ..... (4)

2. Stems uniformly pubescent with spreading glandular trichomes, eglandular hairs absent or nearly so; southcentral Arizona. ..... var. *platyphylla*

2. Stems variously pubescent with eglandular trichomes, or else glabrous or nearly so; southern Arizona. ..... (3)

3. Stems uniformly pubescent with a dense vestiture of short eglandular hairs; Cochise, Santa Cruz, and Pima counties. ..... var. *tessellata*

3. Stems glabrous or nearly so (only a few scattered hairs occurring); Graham Co. ..... var. *grahamiana*

4. Midstem leaves mostly 6-10 mm long, their petioles 1-2 mm long; nonglandular indument, or lowest level of vestiture, mostly 0.1-0.2 mm high; Zacatecas, San Luis Potosí, Guanajuato, Hidalgo, and Puebla. ..... (5)

4. Midstem leaves mostly 10-35 mm long, their petioles mostly 2-10 mm long; nonglandular vestiture mostly 0.2-0.5 mm high, or vestiture absent; N San Luis Potosí northwards. ..... (6)

5. Stems and leaves uniformly strigose with closely appressed eglandular arcuate hairs 0.5-0.15 mm high; Zacatecas. ..... var. *zacatecensis*

5. Stems and leaves hispidulous with merely downcurved eglandular hairs, or with a layer of both eglandular and glandular hairs, the latter 0.2-0.5 mm high; San Luis Potosí, Guanajuato, Hidalgo, and Puebla. var. *potosina*

6. Stems with vestiture mostly uniform, eglandular and somewhat reflexed; western Coahuila, Chihuahua, Sonora, and closely adjacent U.S.A. (Arizona, New Mexico, Texas). ..... var. *tessellata*

6. Stems with vestiture decidedly glandular throughout, or glandular hairs variously intermixed with short reflexed or nearly straight eglandular hairs. ..... (7)

7. Stems variously sprawling or recumbent; leaves broadly ovate, mostly 1.5-2.0 times as long as wide; México. ..... var. *novoleonensis*

7. Stems erect or ascending, leaves ovate, mostly 2-3 times as long as wide; U.S.A. (Davis Mts. of trans-Pecos Texas). ..... var. *davisiana*

*Scutellaria potosina* Brandegee subsp. *potosina* var. *potosina*, Map, Figure 6. Univ. Calif. Publ. Bot. 4:187. 1911. TYPE: MEXICO. San Luis Potosí: Minas de San Rafael, Nov 1910, *C.A. Purpus 4879* (HOLOTYPE: UC!; Isotypes: F!,G!,MO!).

Perennial herbs 10-30 cm high. Stems mostly erect or ascending, rather uniformly pubescent with a layer of mostly downturned eglandular hairs 0.1-0.2 mm high, above these often occur a layer of straight glandular hairs 0.2-0.5 mm high. Leaves mostly 6-10 mm long, 3-8 mm wide, broadly ovate to broadly elliptical, 1-2 times as long as wide. Corollas mostly 8-12 mm long. Nutlets black, tessellate.

REPRESENTATIVE SPECIMENS: MEXICO. Guanajuato: Mpio. San Luis de la Paz, Cañada de Pozos, 2100 m, 18 Jul 1990, *Ventura 8310* (F). Hidalgo: Mpio. Jacala, "International Highway", 4500 ft, 24 Jun 1939, *Chase 7109* (F,GH,MICH); "Mountain roadside", 4500 ft, 6 Jul 1939, *Chase 7328* (F); Jacala, 15 Aug 1937, *Edwards 896* (F); 5 mi N of Jacala, 5300 ft, 17 Apr 1946, *Johnston s.n.* (TEX); Mpio. Zimapan, on trail from Zimapan to mines of El Norte, N of Zimapan 7500-7800 ft, 11 Aug 1948, *Moore 4458* (GH). Puebla: 1 mi S of Tejupan, 28 Mar 1955, *Wiggins 13258* (CAS-DS). San Luis Potosí: Mpio. Guadalcazar, 8 mi E of highway 57 along road to Guadalcazar, 1770 m, 28 Aug 1986, *Breedlove 63272* (CAS); Minas de San Rafael, Jul 1911, *Purpus 5294* (F,GH,US); Mpio. Ciudad del Maiz, 4 km from Ciudad del Maiz, 1300 m, 26 Mar 1959, *Rzedowski 10232* (MICH); 13.2 mi W of Cerritos, 7 Aug 1983, *Starr 655* (ARIZ).

Epling (1942) included in his concept of subspecies *potosina*, material which I include in var. *novoleonensis*, the latter mostly distinguished from var. *potosina* by its larger leaves, longer vestiture, and recumbent habit. In spite of the half century since Epling's treatment, relatively few collections of var. *potosina* have come to the fore; indeed all of these are cited in the above.

The var. *potosina* apparently intergrades northwards into var. *novoleonensis*, to judge from the large number of variable collections of the latter in the southern part of its distribution.

**Scutellaria potosina** Brandegee subsp. **potosina** var. **davisiana** B.L. Turner, *var. nov.* Map, Figure 6. TYPE: U.S.A. Texas: Jeff Davis Co., Davis Mountains, 24 Apr 1902, *S.N. Tracy & F.S. Earle 340* (HOLOTYPE: TEX!; Isotypes: F!,GH!,MICH!,MO!,US!).

*Scutellariae potosinae* Brandegee var. *tessellatae* (Epling) B.L. Turner similis sed caulibus dense ubique glandulosi-pubescentibus trichomatibus patentibus (vs. trichomatibus eglandulosis retrorsis) differt.

ADDITIONAL SPECIMENS EXAMINED: U.S.A. Texas: Jeff Davis Co., highway 118, 1.8 mi SE of intersection with highway 166, 24 May 1991, *Bierner 91-29* (TEX); Valentine road, 29 Jun 1928, *Cory 2340* (GH); N of Marfa, 18 Apr 1929, *Ingram 2714* (US); Madera Spring, 4 May 1913, *M.E. Jones 18540* (CAS,CAS-DS), pine woods, ridge between Bob Manning and Little Aguja Canyons, 1600 m, 17 Jun 1931, *Moore 3139* (GH,MICH); Davis Mountains, 15 Jun 1926, *Palmer 30899* (GH, TEX); 5 mi NW McDonald Observatory, 14 Jun 1941, *Rose-Innes 1144* (TEX); Madera Spring, 9 May 1937, *Warnock T84* (ARIZ,GH,TEX,US); Limpia Creek, 13 May 1914, *Young 254* (TEX).

This weakly differentiated variety appears to be confined to pine woodlands in the higher portions of the Davis Mountains, in or along streams leading from

such areas. It has the habit of var. *tessellata* but the glandular vestiture of var. *novoleonensis*. Epling (1942) treated var. *davisiana* as part of his concept of *Scutellaria potosina* subsp. *platyphylla*, but the latter, while superficially similar, has quite different vestiture, as indicated in the above key, and is restricted to southcentral Arizona.

Occasional specimens of var. *tessellata* from the lower *Juniperus* woodlands of adjacent Brewster and Presidio counties may have sparsely glandular stems (e.g., *Butterwick B-1008* [TEX]) and I take these to be partial intergrades between the two varieties, but overall closer to *tessellata*. Indeed, Epling's *Scutellaria potosina* subsp. *parviflora* appears to be based upon specimens showing gene flow from *S. potosina* var. *davisiana*, most of the specimens cited by him showing at least a few glandular trichomes scattered amongst an otherwise downturned eglandular vestiture. Var. *davisiana* is named for the Davis Mountains, to which it seems confined.

**Scutellaria potosina** Brandegee subsp. **potosina** var. **grahamiana** B.L. Turner, *var. nov.* Map, Figure 6. TYPE: U.S.A. Arizona: Graham Co., Galiuro Mts., Redfield Canyon near junction with Sycamore Canyon, 3950 ft, 5 Aug 1981, *T.R. Van Devender & F.W. Reichenbacher 744* (ARIZ!).

*Scutellariae potosinae* Brandegee var. *tessellatae* (Epling) B.L. Turner similis sed caulibus ac foliis glabris vel paene glabris.

ADDITIONAL SPECIMEN EXAMINED: U.S.A. Arizona: Graham Co., Galiuro Mts., Redfield Canyon, just above Sycamore Canyon, 21 May 1980, *Van Devender & Reichenbacher s.n.* (ARIZ).

This taxon is distinguished by its nearly glabrous condition, the stems being only very sparsely pubescent with scabridulous downcurved hairs, or rarely very short glandular hairs. The leaves are mostly glabrous except for short incurved hairs along the major veins and upon the margins. Mature nutlets are absent, but the plant seems in all other ways comparable to var. *tessellata*, except for its occasional short glandular hairs. It is possible that var. *grahamiana* is only a nearly glabrous form of var. *tessellata* but it apparently does not occur within the geographical distribution of the latter, and it is known by at least two collections, both from the same general area. Because of this, and the absence of near-glabrous forms across the entire gamut of *Scutellaria potosina*, I feel that formal recognition at the varietal level for this population is justified.

**Scutellaria potosina** Brandegee subsp. **potosina** var. **novoleonensis** B.L. Turner, *var. nov.* Map, Figure 6. TYPE: MEXICO. Nuevo León:

Mpio. Galeana, San Francisco Canyon, ca. 15 mi SW of Pueblo Galeana, scattered in open woods about the mouth of the canyon, 7500-8500 m, 9 May 1934, *C.H. & M.T. Mueller* (HOLOTYPE: GH!; Isotypes: F!,GH!,MICH!,TEX!).

*Scutellariae potosinae* Brandegee var. *potosinae* sed caulibus plerumque reclinatis vel procumbentibusque vestimento numero magniore trichomatium glandulosorum et foliis majoribus (plerumque 12-20 mm longis vs. 8-12 mm).

REPRESENTATIVE SPECIMENS: MEXICO. Coahuila: Mpio. Arteaga, Sierra Zapaliname, 2370 m, 25 Mar 1990, *Hinton et al. 20236* (TEX). Nuevo León: Mpio. Galeana, S.J. Las Joyas, 2530 m, 27 Jul 1983, *G.B. Hinton 18507* (GH,TEX,US); Cerro Potosí, ca. 8000 ft, 16 Aug 1938, *Schneider 1004* (ARIZ,F,GH,MICH). San Luis Potosí: Mpio. Charcas, Charcas on hillsides, 29 Jun 1934, *C.L. Lundell 5050* (LL,MICH). Tamaulipas: 3 mi N of Miquihuana, in pine forest, 12 Jul 1949, *Stanford 2405* (CAS,CAS-DS,GH,US).

This taxon was included by Epling (1942) in his broad concept *Scutellaria potosina* subsp. *potosina*. Material which I recognize as var. *novoleonensis* is abundant in the pine-oak forests of Nuevo León, usually occurring from 1500-2500 m. It is readily distinguished from var. *potosina* by its procumbent habit, larger leaves, higher, usually more glandular vestiture, and generally larger corollas (mostly 12-20 mm long vs. 8-10 mm). Nevertheless, occasional plants approach var. *potosina* near regions of peripheral contact (e.g., *Lundell 5050*, cited above).

In the vicinity of Saltillo, Coahuila, and Monterrey, Nuevo León, collections are found which vary in the direction of var. *tessellata* (mostly in vestiture characters, e.g., *Villareal 1699* [TEX]). Collections from central Coahuila (Sierra San Marcos [TEX]) also approach var. *tessellata*, both in leaf shape and vestiture.

Material of var. *novoleonensis* is especially abundant in herbaria. For example, collections by *Hinton et al.* (*19904, 20527, 20964, 22024, 22091, 22620*, all on deposit at TEX) have been obtained over a wide area (from Cerro El Viejo in southernmost Nuevo León, to near Saltillo, Coahuila) at varying elevations (920 m to 2700 m) but the specimens are surprising uniform as regards habit, leaf shape and vestiture.

**Scutellaria potosina** Brandegee subsp. **potosina** var. **tessellata** (Epling) B.L. Turner, *comb. nov.* Map, Figure 6. BASIONYM: *Scutellaria tessellata* Epling *ex* Kearney & Peebles, J. Wash. Acad. Sci. 29:488. TYPE: U.S.A. Arizona: Cochise Co., Huachuca Mountains, 3 Sep 1903, 7000 ft., *M.E. Jones s.n.* (HOLOTYPE: US!). Epling cites the collection date as Mar 1902, but the date on the label is as given here.

*Scutellaria potosina* Brandegee subsp. *parviflora* Epling, Univ. Calif. Publ. Bot. 20:65. 1942. TYPE: U.S.A. Texas: Brewster Co., Chisos Mts., upper Blue Creek, 1520 m, 25 Jun 1931, *J.A. Moore & J.A. Steyermark 3231* (HOLOTYPE: UC!; Isotypes: CAS-DS!,GH!, MICH!,MO!).

Epling (1942) restricted his concept of this taxon to southern Arizona, New Mexico, and adjacent Sonora and Chihuahua, México. He contended that "It is readily distinguished from *S. potosina* by the small decurved hairs." In reality, vestiture in *Scutellaria potosina* is remarkably variable and I cannot distinguish *S. tessellata* sensu Epling from collections obtained in northern Coahuila and adjacent trans-Pecos Texas that Epling assigned to *S. potosina*. As shown in Figure 6, the var. *tessellata* is replaced by var. *novoleonensis* in southern Nuevo León, México, the latter in turn replaced by var. *potosina* in San Luis Potosí and southwards, there being intergradation between these taxa in the area of geographical replacement.

As noted under var. *platyphylla*, which is restricted to Arizona, the var. *tessellata* does not appear to intergrade strongly with that glandular-pubescent taxon, hence its retention under the monotypic subspecies *platyphylla*. A possible intermediate between var. *platyphylla* and var. *tessellata* was examined: *Harrison 1949* (ARIZ) from hills above Verde River above Ft. McDowell in Maricopa County; the specimen has short glandular hairs dispersed among mostly eglandular hairs. In short, the plant is closest in its vestiture to var. *tessellata*, but has a smattering of short glandular hairs that suggest gene flow from var. *platyphylla*. Perhaps both taxa occur near or at this locality but, so far as known, typical elements of var. *tessellata* have not been collected from the area concerned.

In Texas, the var. *tessellata* grades into the glandular-pubescent var. *davisiana*, hence retention of the latter in the subspecies *potosina*.

**Scutellaria potosina** Brandegee subsp. **potosina** var. **zacatecensis** B.L. Turner, *var. nov.* Map, Figure 6. TYPE: MEXICO. Zacatecas: 9 mi NW of Sombrerete on eastern bajado of Sierra Papantón, 2400-2500 m, 26 Sep 1948, *Howard S. Gentry 8467* (HOLOTYPE: ARIZ!; Isotypes: GH!,MICH!,US!).

*Scutellariae potosinae* Brandegee var. *potosinae* sed vestimento ca. 0.05 mm alto trichomatum uniformiter appressorum, *S. wrightii* A. Gray reminescens.

This taxon is known only by type material. It has the habit and leaves of var. *potosina* but differs markedly in having a uniformly appressed pubescence

reminiscent of *Scutellaria wrightii*. More detailed study with additional collections might suggest specific status. Epling (1951) examined type material and considered it to be *Scutellaria tessellata* without comment.

**Scutellaria potosina** Brandegee subsp. **platyphylla** Epling var. **platyphylla** (Epling) B.L. Turner, *comb. & stat. nov.* Map, Figure 6. BASIONYM: *Scutellaria potosina* Brandegee subsp. *platyphylla* Epling, Univ. Calif. Publ. Bot. 20:64. 1942. TYPE: U.S.A. Arizona: Maricopa Co., Fish Creek Canyon, Apache Trail, 4 May 1931, *G.J. Harrison 7778* (HOLOTYPE: US; Isotype: ARIZ!).

This taxon is quite distinct and readily distinguished from Arizona plants of var. *tessellata* by its widely spreading glandular trichomes and distribution. Indeed, I saw only a single hypothetical intermediate (*cf.* discussion under var. *tessellata*) between the two taxa.

Epling (1942), positioned in his concept of subsp. *platyphylla*, plants from the Davis Mountains of trans-Pecos Texas which I place in subsp. *potosina* var. *davisiana*, the latter readily distinguished from var. *platyphylla* by its shorter glandular vestiture, the glandular trichomes usually intermixed with reflexed eglandular hairs of the type found in var. *tessellata* and var. *potosina*.

SCUTELLARIA RESINOSA Torr., Map, Figure 5.

*Scutellaria resinosa* Torr., Ann. Lyc. N.Y. 2:232. 1828. TYPE: U.S.A. Oklahoma: along the Canadian River, *James s.n.* (HOLOTYPE: NY).

My circumscription of this taxon is the same as that of Epling (1947). As indicated by him "the pubescence is constant and distinctive", as exemplified in his plate 2. Habitally it resembles *Scutellaria wrightii*, the latter readily distinguished by its appressed pubescence (vs. spreading) and more eastern distribution. The two taxa are largely allopatric and so far as known do not grow together at a given site, nor have I seen intermediates.

SCUTELLARIA STEWARTII B.L. Turner, Map, Figure 2.

**Scutellaria stewartii** B.L. Turner, *sp. nov.* TYPE: MEXICO. Coahuila: Cañon de Milagro, a deep narrow box-canyon in limestone, eastern side of the Sierra de los Guajes, ca. 12 km W of Hacienda de la Encantada, 10-16 Sep 1941, *Robert M. Stewart 1518* (HOLOTYPE: LL!; Isotypes: F!,GH!).

*Scutellariae hispidulae* B.L. Robins. similis sed foliis valde petiolatis (vs. subsessilibus) et paginis nucularum tessellata (vs. rugosa) differt.

Perennial herbs 20-40 cm high, arising from elongate slender rhizomes. Stems moderately to sparsely pubescent with short or elongate mostly upturned hairs, these very variable in length, ranging from arcuate and 0.1-0.2 mm high (as on the type) to widely spreading and 0.5-1.5 mm high. Midstem leaves mostly 1.5-3.0 cm long, 1.0-2.5 cm wide; petioles mostly 3-8 mm long; blades broadly ovate to subdeltoid, sparsely pilose, the margins more or less crenulodentate. Flowers numerous, mostly arranged terminally on the stems among usually much-reduced leaves. Flowering calyces ca. 5 mm long. Corollas mostly 11-18 mm long. Nutlets ca. 1.5 mm long, buff-colored to dark brown, markedly mammilate.

ADDITIONAL SPECIMENS EXAMINED: MEXICO. Coahuila: Sierra Madera Mts., 4 mi. W and 10 mi. S of Ocampo, 16 Jun 1956, *Graber 169* (TEX); ca. 29 airline mi. WNW of Cuatro Cienegas, 2000-2300 m, 10 Aug 1976, *Henrickson 15263a* (TEX); Sierra Madera Mts., ca. 2 km E of Picacho de Zozaya, 8600-8800 ft., 13 Sep 1941, *I.M. Johnston 9027* (GH); Sierra Hermosa, ca. 100 mi. NW of Muzquiz, 4800 ft, 13 May 1968, *La Torre s.n.* (TEX); Mina El Aquirreño, N side of Sierra de la Paila, *M.C. Johnston 11686* (LL); Sierra de la Gloria, SE of Monclova, Jul 1939, *Marsh 1891* (F,GH,TEX); Mpio. de Castanos, Sierra de San Lazaro, Puerta de San Lazaro, 31 Aug 1939, *Mueller 3081* (GH,LL,MICH,UC); Sierra de la Paila, El Cedral, 20 Aug 1987, *Villareal 3877* (TEX); Sierra de la Gloria, Cañon El Cono, 6 Sep 1976, *Wendt 1643* (LL).

Most workers have treated *Scutellaria stewartii*, largely because of its upturned pubescence, as part of a widely distributed highly variable *S. hispidula*. The latter is markedly distinct from the present taxon, having nearly sessile leaves and nutlets with tessellate ornamentation.

Additionally, *Scutellaria stewartii* appears largely confined to dry calcareous slopes of northcentral México mostly from 1500-2200 m, while *S. hispidula* occurs in igneous soils of central and southcentral México, southwards along the Pacific Coastal Mountains to Durango, mostly from 2000-3000 m.

Actually, *Scutellaria stewartii* appears to be relatively closely related to *S. fraxinea* Epling from southern Nuevo León, both having similar habits, vestiture, leaves, and nutlets. Epling positioned the latter in the sect. *Galericularia* but it would appear equally close, if not closer, to the sect. *Lateriflorae*. In short, the positioning of *S. stewartii* in the sect. *Resinosa* is moot. More detailed analysis may show that it belongs to the sect. *Lateriflorae*.

SCUTELLARIA TEXANA B.L. Turner, Map, Figure 3.

**Scutellaria texana** B.L. Turner, *sp. nov.* TYPE: U.S.A. Texas: Terrell Co., low hills in upper Big Canyon, ca. 30 mi. N of Sanderson towards Sheffield, abundant in limestone soils, 2800 ft, 1 Jun 1957, *Barton H. Warnock 14727* (HOLOTYPE: LL!; Isotypes: SRSC!,TEX!).

*Scutellariae drummondii* Benth. var. *edwardsianae* B.L. Turner similis sed vestimento glanduloso plerumque breviore (0.1-0.4 mm alto vs. plerumque 0.4-1.0 mm) trichomatibus multo brevioribus eglandulosis intercalaribus carentibusque, et paginis nucularum tuberculata vel verrucata (vs. lamellosa) differt.

Annual much-branched low herbs mostly 10-30 cm high. Stems erect or ascending, branched from the very base, uniformly densely glandular-pubescent with spreading hairs 0.1-0.4 mm long. Midstem leaves mostly 1.0-1.5 cm long, 0.5-1.0 cm wide; petioles 3-9 mm long; blades ovate to obovate to entire to weakly crenulate. Flowers paired at the nodes throughout most of the stem. Corollas white, blue or purple, mostly 5-8 mm long. Nutlets black, 0.6-0.8 mm long, rugose.

ADDITIONAL REPRESENTATIVE SPECIMENS: U.S.A. Texas: Brewster Co., Maravillas Canyon, ca. 7 mi. E of Black Gap Wildlife Preserve, 22 Apr 1961, *Correll 23725* (LL). Pecos Co.: ca. 20 mi. W of Sanderson, 2900 ft, 1 Jun 1923, *Warnock 14923* (LL,TEX). Reeves Co.: Pecos, 14 Jan 1931, *Tharp s.n.* (TEX). Terrell Co.: 15 mi. S of Sheffield, Blackstone Ranch, 8 Jun 1949, *Webster 167* (MICH,TEX). Upton Co.: 10 mi. E of McCamey, amongst rock on brows of limestone hills, 30 Apr 1944, *Muller 5185* (LL). Val Verde Co.: rocky hills at bridge over Pecos River along highway 90, 7 Jul 1958, *Correll 19420* (LL).

MEXICO. Coahuila: 15 mi. W of Allende, 1 May 1959, *Correll 21275* (CAS,LL); Muzquiz, Apr 1938, *Marsh 1141* (F,TEX); Muzquiz, Apr 1938, *Marsh 1198* (F,GH,TEX); Hacienda La Rosita, 26 Jun 1936, *Wynd 293* (ARIZ, GH,US). Nuevo León: Lampazos, Rancho Rosendez, 24 Jun 1937, *Edwards* (ARIZ,CAS-DS,F,TEX).

This is apparently a fairly common species in the trans-Pecos region of Texas and northern Coahuila. It was first collected by Charles Wright in 1851

in the "valley of the Pecos" (*C. Wright 1540* [GH!]). Asa Gray thought the plant similar or close to *Scutellaria drummondii*, but was aware that it did not match well, having scribbled on one sheet "*Scutellaria* n. sp., cf. *drummondii*."

Epling (1942) included the taxon in his broad concept of *Scutellaria microphylla* Benth. without having seen type material of the latter. As noted under Excluded Taxa in the present paper, *S. microphylla* probably does not belong to the sect. *Resinosa* (sensu Epling).

*Scutellaria texana*, while having the annual habit and vestiture of *S. drummondii*, differs radically from the latter in its nutlet ornamentation (possessing rugose or rounded enations; versus flattened or lamellar enations). In addition, plants of *S. texana* appear much more floriferous with smaller corollas. The single collections from northern Nuevo León, cited above, differs in having larger leaves and longer hairs than typical, approaching that of *S. monterreyana*.

SCUTELLARIA WRIGHTII A. Gray, Map, Figure 7.

*Scutellaria wrightii* A. Gray, Proc. Amer. Acad. Arts 8:370. 1872. TYPE: U.S.A. Texas: Uvalde Co., prairies near the Sabinal River, 13 May 1851, *C. Wright* exsic. no. *1539* (LECTOTYPE [indirectly selected by Epling 1942, and accepted here]: GH!; Isolectotype: US!). The date given for the lectotype was taken from Johnston (1940).

*Scutellaria integrifolia* L. var. *brevifolia* A. Gray, *in* Hall, *Pl. Tex.* 1873. *Scutellaria brevifolia* (A. Gray) A. Gray, *Syn. Fl.* 2:380. 1878. *Scutellaria resinosa* Torr. var. *brevifolia* (A. Gray) Penland, Rhodora 26:72. 1924. TYPE: U.S.A. Texas: Dallas Co., near Dallas, w/o date, *E. Hall 458* (HOLOTYPE: GH; Probable isotype: F!). The original publication of this name was without description (*nomen nudum*) but a specimen (*Hall 458*) from Dallas Co., Texas was cited and I take this to be sufficient for publication and typification purposes. If one views the original place of publication as the *Synoptical Flora* (1878) then selection of a lectotype might be in order since Gray cited the afore mentioned Hall collection and additional collections by Reverchon. If needed, I would lectotypify *Scutellaria integrifolia* var. *breviflora* by *Hall 458*.

My concept of this species is essentially that of Epling (1942). It is clearly closely related to *Scutellaria resinosa* but I do not find intergrades between these, and prefer to retain them as "clean species", as noted under *S. resinosa*. If treated as a variety of *S. resinosa* the correct name would be var. *brevifolia*. Type material of *S. integrifolia* var. *brevifolia* (and additional collections from Dallas County, e.g., *C.L. Lundell & A.A. Lundell 9233, 9526, 11996, 14018* [LL]) has quite large corollas (up to 35 mm long) but otherwise differs but

little from typical forms of *S. wrightii*. Penland's (1924) concept of *S. resinosa* var. *resinosa* included *S. wrightii*, but Epling and I both disagree with his assessment in this instance.

While intergrades between *Scutellaria wrightii* and *S. resinosa* were not found in the present study, occasional plants of *S. wrightii* somewhat intermediate or approaching *S. drummondii* were noted (*e.g.*, Collin Co., *Correll 29912* LL; Travis Co., *Waddle 276* TEX). Such plants appear to be biennial or weakly perennial and possess an indument of raised recurved hairs reminiscent of *S. potosina*. I believe such plants to be hybrids or hybrid derivatives of *S. wrightii* × *S. drummondii* var. *edwardsiana*, the two taxa being broadly sympatric and frequently occur together or near each other, hence the occasional hybrid is not unexpected.

## EXCLUDED TAXA

*Scutellaria molanquitensis* P.H. Valencia, Bol. Soc. Bot. Mex. 46:43. 1984.

While positioned in the sect. *Resinosa* by its author, based upon its red corollas, suffruticose habit, and nutlet ornamentation, I would position this taxon in the sect. *Spinosae*.

*Scutellaria microphylla* Moç. & Sessé *ex* Benth., *in* Lindl., Bot. Reg. 18. 1832.

Epling positioned this taxon in sect. *Resinosa*. Unfortunately, he did not examine type material of this name, nor have I been able to locate any. Epling (1942, p. 67) cites plate 1493 in the original publication as picturing the taxon concerned, but the said plate is labeled *Scutellaria alpina* and does not relate to the *Resinosa* complex. The very brief description rendered by Bentham does not permit one to know for certain what the name might apply to, but I doubt that it applies to any taxon of the sect. *Resinosa*, at least as used by Epling, since Sessé, who collected the type material, did not collect in northern México (where Epling applied the name to what I recognize as *S. texana*).

## ACKNOWLEDGMENTS

This study is based upon the examination of approximately 1,705 specimens from the following institutions, as follows (numbers of loans shown in parenthesis): CAS (78), F (118), GH (204), LL (300), MO (151), TEX (500), UC (123), US (198).

Dr. Guy Nesom provided the Latin diagnoses, and he and T.P. Ramamoorthy kindly reviewed the manuscript.

## LITERATURE CITED

Bentham, G. 1834. Labiatarum genera et species, 419-445. Ridgeways & Sons, London, Great Britain.

Briquet, J. 1895. Labiatae, In A. Engler & K. Prantl, *Die Natürlichen Pflanzen.* 4(3a):225-227. Wilhelm Engelmann, Leipzig, Germany.

Epling, C. 1942. The American species of *Scutellaria.* Univ. Calif. Publ. Bot. 20:1-141.

———. 1951. Supplementary notes on American Labiatae – V. Brittonia 7:129-142.

Johnston, I.M. 1940. Field Notes of Charles Wright for 1849 and 1851-52. Manuscript copy at GH and TEX.

Lane, T.M. 1983. Mericarp micromorphology of Great Plains *Scutellaria* (Labiatae). Southwestern Naturalist 28:71-89.

Leonard, E.C. 1927. The North American species *Scutellaria.* Contr. U.S. Natl. Herb. 22:703-748.

MacRoberts, D.T. 1984. *The Vascular Plants of Louisiana* 6:100. Bull. Mus. of Life Sciences, Louisiana State University, Shreveport, Louisiana.

Olmstead, R.G. 1990. Systematics of the *Scutellaria angustifolia* complex (Labiatae). Contr. Univ. Michigan Herb. 17:223-265.

Penland, C.W. 1934. Notes on North American Scutellarias. Rhodora 26:61-79.

Sanders, R.W. & P.D. Cantino. 1984. Nomenclature of the subdivisions of the Lamiaceae. Taxon 33:64-72.